

D1
(c) creating a digital model of the individual component based upon the identified data elements.

D2
150
129.
(Amended) A computer-implemented method for use in creating a digital model of an individual component of a patient's dentition, the method comprising:

(a) scanning the patient's dentition, or a physical model thereof, to produce a data set that forms a three-dimensional (3D) representation of the patient's dentition;

(b) applying a computer-implemented test to the data set to identify data elements that represent portions of an individual component of the patient's dentition; and

(c) creating a digital model of the individual component based upon the identified data elements, wherein the individual component is an individual tooth in the patient's dentition.

D3
20. (Amended) A computer-implemented method for use in creating a digital model of an individual component of a patient's dentition, the method comprising:

(a) scanning the patient's dentition, or a physical model thereof, to produce a data set that forms a three-dimensional (3D) representation of the patient's dentition;

(b) applying a computer-implemented test to the data set to identify data elements that represent portions of an individual component of the patient's dentition; and

(c) creating a digital model of the individual component based upon the identified data elements, wherein applying the computer-implemented test includes identifying elements of the data set that represent a structural core of the individual component to be modeled and labeling those data elements as belonging to the individual component, wherein the individual component to be modeled includes an individual tooth and the structural core approximately coincides with neurological roots of the tooth.

D4
75. (Twice Amended) A computer-implemented method for use in creating a digital model of a tooth in a patient's dentition, the method comprising:

(a) scanning the patient's dentition, or a physical model thereof, to produce a three-dimensional (3D) data set representing the patient's dentition having at least two teeth therein;

(b) applying a computer-implemented test to identify data elements that represent an interproximal margin between the two teeth in the dentition to facilitate separating the two teeth; and

(c) applying another computer-implemented test to select data elements that lie on one side of the interproximal margin for inclusion in the digital model.

116. (Amended) A computer-implemented method for use in creating a digital model of a tooth in a patient's dentition, the method comprising:

(a) scanning the patient's dentition, or a physical model thereof, to produce a 3D dataset representing at least a portion of the patient's dentition, including at least a portion of a tooth and gum tissue surrounding the tooth;

(b) applying a test to identify data elements lying on a gingival boundary that occurs where the tooth and the gum tissue meet; and

(c) applying a test to the data elements lying on the boundary to identify other data elements representing portions of the tooth, wherein applying the test to identify data elements on the gingival boundary includes creating a series of roughly parallel 2D planes, each intersecting the dentition roughly perpendicular to an occlusal plane of the dentition, and each including data elements that represent a cross-sectional surface of the dentition, wherein the cross-sectional surface in each 2D plane includes two cusps that roughly identify the locations of the gingival boundary, wherein applying the test includes identifying the cusps in each cross-sectional surface.